IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Thomas A. Figura et al.	§	Group Art Unit: 2829
Serial No.: 09/470,650	§	Examiner: Lisa Kilday
Filed: December 22, 1999	§	Atty. Docket: 94-0280.04
Title: USE OF A PLASMA SOURCE TO FORM A LAYER DURING THE FORMATION OF A SEMICONDUCTOR DEVICE	§	

RESPONSE TO THE NOTICE OF ALLOWABILITY DATED DECEMBER 8, 2003

Mail Stop Patent Application
Commissioner for Patents
P.O. Box 1450
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Date 1/14/04 Susan Jerome Signature

Dear Sir:

Applicants herein respond to the Notice of Allowability dated December 8, 2003. In that Notice, the Examiner claimed to be unpersuaded by Applicants' earlier comments concerning the Examiner's previous reasons for allowability. Those reasons included the Examiner's interpretation of the preamble. Nevertheless, Applicants note that the Examiner has admitted that the preamble has not been accorded patentable weight. (Notice at p. 2.)

To the extent relevant, Applicants reiterate that the allowed claims are supported by the Examiner's interpretation as well as other interpretations. For example, the claims' references to first and second metal lines are also supported by elements 18 in the figures and text of the current application. Although these elements were labeled as insulators for ease of explaining some exemplary embodiments within the scope of the invention, the Specification expresses that "the invention can be used to form a number of

. . . structures." (Specification at p. 4, ln. 17-18. Applicants contend that the Examiner's citation of the disclosure's storage node example (Notice at p. 2-3) is but one example supported by the broad "number of . . . structures" language.)

The Specification further expresses that, concerning embodiments wherein material is provided in a recess, the recess can be "any recess." (Specification at p. 9, ln. 21.) Moreover, the Specification specifies that the recess can be formed in between two protruding features and in layers other than an oxide. (***Id***. at p. 10, ln. 1-3.) Still further, the Specification discloses a layer "other than an oxide" in the form of a conductive layer. (***Id*** at p. 8, ln. 14.) Hence, the invention discloses conductive protruding features. Moreover, Applicants submit that one of ordinary skill in the art would understand metal to be conductive. THE ILLUSTRATED DICTIONARY OF ELECTRONICS, for example, defines "conductor" as a "material which conducts electricity with ease, such as metals" and defines "metal" as a "material which exhibits . . . good electrical . . . conductivity." (Gibilisco, Stan, THE ILLUSTRATED DICTIONARY OF ELECTRONICS (6th ed.) (for the Examiner's convenience, copies of the relevant DICTIONARY pages are included in an appendix to this Response.) Furthermore, Applicants submit that one of ordinary skill in the art would understand metal lines to be protruding features. Support for this can be found in prior art. U.S. Patent No. 5,164,332 by Kumar, for example, characterizes metal lines as protruding features. (Kumar at col. 3, ln. 15-17 (disclosing copper features comprising line sections protruding above polyimide). A copy of Kumar was included in the IDS submitted on 11/5/03.) As a result, elements 18 of the application necessarily include disclosure of metal lines.

Applicants also note that such a conclusion is consistent with the treatment by the Patent and Trademark Office (PTO) of similar phrases during prosecution of sibling applications as well at the parent. Applicants have previously cited prosecution of U.S App. Ser. No 09/471,460 (both '460 and the current application are divisionals of U. S. App. Ser. No. 09/046,835, filed Oct. 24, 1997 and issued as U.S. Pat. No. 6,117,764). During the prosecution of '460, the use of the term "metal features" was addressed. Applicants presented arguments similar to the ones articulated above (*see* 460's Amendment and Response to the Office Action dated March 20, 2002 at p. 2-3), and the

Examiner dropped the issue in the next Office Action (*see* '460's Office Action dated 8/12/02).

An even more relevant example occurred during prosecution of U.S App. Ser. No 09/470,651, a continuation of the current application's parent. During prosecution of '651, the Examiner questioned the use of the phrase "metal lines." (See '651's Office Action dated 2/27/02 at p. 2.) Applicants presented arguments similar to the ones articulated above. (*See* 651's Amendment and Response to the Office Action dated 2/27/02 at p. 1-3.) The Examiner expressly withdrew the issue in the next Office Action. (*See* '651's Office Action dated 10/01/02 at p. 2.)

As for the parent application -- U. S. App. Ser. No. 09/046,835 -- it is noteworthy that Applicants introduced the phrase "metal lines" in many of the initial claims; the parent's examiner never made issue of that phrase; many of the claims in the issued patent contain that phrase (*see* U.S. Pat. No. 6,117,764 at claims 6-9); and the parent's examiner did not feel it necessary to articulate the current Examiner's interpretation of first and second metal lines when allowing those claims. (*See* '835's Notice of Allowability dated 6/19/00.)

Accordingly, Applicants request that the Examiner acknowledge that the claims are allowable based on the limitations expressed therein. For example, prior art fails to anticipate or render obvious claim 41's method of developing an in-process semiconductor device having a first metal line and a second metal line, the method comprising: placing the device in a deposition and etch surrounding; forming a polymer between the first metal line and the second metal line; providing a layer over the polymer; and retaining a state of the polymer. Dependent claims 42-43 are allowable based on the limitations they incorporate as well as the additional limitations they express.

Please address further correspondence with this application to: Charles B. Brantley, II, Micron Technology, Inc., Mail Stop 525, 8000 S. Federal Way, Boise, ID 83706-9632, telephone number (208) 368-4557.

Date 1/9/4

Charles Brantley

Charles B. Brantley II, Reg. No. 38,086

Appendix:

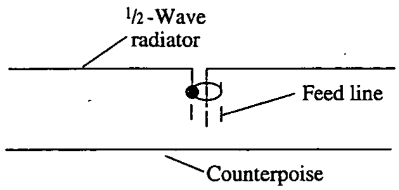
Definitions of "conductor" and "metal" from Gibilisco, Stan, THE ILLUSTRATED DICTIONARY OF ELECTRONICS (6th ed.)

The Illustrated Dictionary of Electronics

Sixth Edition

Stan Gibilisco

TAB Books
Division of McGraw-Hill, Inc.
New York San Francisco Washington, D.C. Auckland Bogotá
Caracas Lisbon London Madrid Mexico City Milan
Montreal New Delhi San Juan Singapore
Sydney Tokyo Toronto



condenser antenna

making the output current alternate accordingly. Also called *capacitor microphone.*

condensing routine A computer program that takes an object (user written) program from an internal or external memory to punched cards in a way that maximizes the cards' storage capacity.

condensite A plastic insulating material whose base is phenol formaldehyde resin.

conditional Dependent on some external factor, and therefore subject to change.

conditional branch The point in a computer program where a relational test is performed and the statement line in which the test is made is left so that an out-of-sequence instruction can be implemented. Such a branch might be made, for example, following the BASIC statement "if Z = Y then go to (another line in the program)."

conditional branch instruction The instruction in a computer program that causes a conditional branch.

conditional implication operation A Boolean operation in which the result of operand values *a* and *b* are such that the output is high only if input *a* is high and input B is low. Also called *inclusion, if-then operation.*

conditional jump *See* CONDITIONAL BRANCH.

conditional stop instruction In a computer program, an instruction that can cause a halt in the run, as dictated by some specified condition.

conditional transfer *See* CONDITIONAL BRANCH INSTRUCTIONS.

condition code A set of constraints for a computer program. The condition code sets the limits on what can be done with the computer under certain circumstances.

conditioning **1.** The process of making equipment compatible for use with other equipment. Generally involves some design or installation changes. **2.** Interfacing.

Condor A continuous-wave navigational system giving a cathode-ray-tube display for automatically determining the bearing and distance from a ground station. *Compare* BENITO.

conductance Symbol, G. Unit, siemens. The ability of a circuit, conductor, or device to conduct electricity. Conductance is the reciprocal of resistance $G = 1/R = I/E$.

conducted heat Heat transferred by conduction through a material substance, as opposed to convection (movement of matter) and radiation (which occurs through empty space). A heat sink conducts dissipated energy away from a transistor, for example.

conducting layer *See* KENNELLY-HEAVISIDE LAYER.

conduction **1.** The propagation of energy through a medium, depending on the medium for its travel. **2.** The transfer of electrons through a wire. **3.** The transfer of holes through a P-type semiconductor material. **4.** Heat transfer through a material object (*see* CONDUCTED HEAT).

conduction angle *See* ANGLE OF CONDUCTION.

conduction band In the arrangement of energy levels within an atom, the band in which a free electron can exist; it is above the valence band in which electrons are bound to the atom. In a metallic atom, conduction and valence bands overlap; but in semiconductors and insulators, they are separated by an energy gap.

conduction current **1.** The electromagnetic-field flow that occurs in the direction of propagation. A measure of the ease with which the field is propagated. **2.** Current in a wire or other conductor.

conduction-current modulation In a microwave tube, cyclic variations in the conduction current; also, the method of producing such modulation.

conduction electron *See* FREE ELECTRON.

conduction error In a temperature-acutated transducer, error caused by conduction of heat between the sensor and the mounting.

conduction field An energy field that exists in the vicinity of an electric current.

conductive coating A conducting layer applied to the glass envelope of a cathode-ray tube, such as an oscilloscope tube or picture tube. *Also see* AQUADAG.

conductive coupling *See* DIRECT COUPLING.

conductive material *See* CONDUCTOR.

conductive pattern The pattern of conductive lines and areas in a printed circuit.

conductivity Symbol, Σ. Unit, S/m (siemens per meter). Specific conductance, i.e., conductance per unit length. Conductivity is the reciprocal of resistivity: $\Sigma = 1/\rho$.

conductivity meter A device for measuring electrical conductivity. Generally, such a device is calibrated in mhos.

conductivity modulation In a demiconductor, the variation in conductivity resulting from variation of charge-carrier density.

conductivity-modulation transistor A transistor in which the bulk resistivity of the semiconductor material is modulated by minority carriers.

conductor **1.** A material which conducts electricity with ease, such as metals, electrolytes, and ionized gases. Various materials vary widely in their suitability as conductors; the conductivity of commercial copper, for example, is almost twice that of aluminum. *Compare* INSULATOR. **2.** An individual conducting wire in a cable, insulated or uninsulated.

conduit A hollow tube, made of plastic or metal,

MESFET A form of field-effect transistor combining depletion-mode and enhancement-mode properties. A Schottky barrier forms the gate electrode.

mesh **1.** A combination of the elements that form a closed path in a network. **2.** The closed figure (such as the delta or star) obtained by connecting polyphase windings together. **3.** A grid, screen, or similar structure in an electron tube. **4.** One of the flat, screen-like plates employed in a storage tube. *Also see* STORAGE MESH, STORAGE TUBE, and VIEWING MESH.

mesh equations Equations describing fully the current and voltage relations in a network of meshes (*see* MESH, 1).

mesh equations Equations describing fully the current and voltage relations in a network of meshes (*see* MESH, 1).

Mesny circuit A push-pull ultrahigh-frequency oscillator whose grid tank is a pair of parallel wires short-circuited by a slider; the plate tank is a similar pair of wires. The frequency is varied by moving the sliders along the wires.

mesochronous A condition for signals in which significant instants pass at identical average speeds, such as bits per second.

meson An unstable nuclear particle first observed in cosmic rays. A meson may be positive, negative, or neutral. Its mass lies between that of the electron and proton.

mesotron *See* MESON.

message **1.** A body of information communicated between transmitter and receiver. **2.** Data put into a transaction processing system.

message exchange In a digital communications channel, a hardware unit that carries out certain switching functions that would otherwise have to be done by a computer.

message switching system A data communications system having a central computer that receives messages from remote terminals, stores them, and transfers them to other terminals as needed.

metadyne *See* DC GENERATOR AMPLIFIER.

metal An elemental material which exhibits several familiar properties such as luster, ductility, malleability, good electrical and heat conductivity, relatively high density, and the ability to emit electrons. Common examples are aluminum, copper, gold, lead, and silver. *Compare* METALLOID and NONMETAL.

metal-base transistor A bipolar transistor in which the base is a metal film, and the emitter and collector are films of n-type semiconductor material.

metal-ceramic construction The building of certain electronic components by bonding ceramic parts to metal parts. *Also see* CERMET.

metal-film resistor A fixed or variable resistor in which the resistance element is a thin or thick film of a metal alloy deposited on a substrate such as a plastic or ceramic.

metal finder *See* METAL LOCATOR.

metallic binding forces In a crystal, the binding electrostatic force between cations and electrons. Also called *electron-gas binding forces.*

metallic bonding *See* BONDING, 1 and METALLIC BINDING FORCES.

metallic circuit A circuit, such as a two-wire telephone line, in which earth ground is not a part of the circuit. *Compare* GROUND-RETURN CIRCUIT.

metallic crystal A crystal substance in which there exist positive ions and free electrons and is therefore a good electrical conductor.

metallic insulator A short-circuited quarter-wave section of transmission line which acts as an insulator at the quarter-wavelength frequency.

metallicize To make a circuit fully metallic, as when two wires are employed instead of one wire and a ground connection. (Not to be confused with METALLIZE.)

metallic rectifier A dry rectifier employing a metal disk or plate coated with a material such as selenium, an oxide, or a sulfide. *See*, for example, COPPER-OXIDE RECTIFIER; DRY-DISK RECTIFIER; MAGNESIUM-COPPER-SULFIDE RECTIFIER; SELENIUM RECTIFIER.

metallize To treat, coat, or plate with a metal. (Not to be confused with METALLICIZE.)

metallized capacitor A capacitor in which each face of a dielectric film is metallized to form plates. *See*, for example, METALLIZED-PAPER CAPACITOR and METALLIZED-POLYCARBONATE CAPACITOR.

metallized-paper capacitor A paper-dielectric capacitor whose plates are metal areas electrodeposited on each side of a paper film.

metallized-polycarbonate capacitor A fixed capacitor in which the dielectric is a polycarbonate plastic film, and the plates are metal areas electrodeposited on each face of the film.

metallized resistor *See* METAL-FILM RESISTOR.

metal locator An electronic device for locating underground metal deposits, pipes, or wires—or such objects hidden in walls or under floors—by means of the disturbance these objects cause to a radio frequency or magnetic field.

metalloid An element which has some of the properties of a metal. Examples of metalloidal elements widely used in electronics are antimony, arsenic, germanium, silicon, and tin.

metal master *See* ORIGINAL MASTER.

metal negative *See* ORIGINAL MASTER.

metal-oxide resistor A resistor in which the resistance material is a film of tin oxide deposited on a substrate.

metal-oxide silicon field-effect transistor Abbreviation, MOSFET. A field-effect transistor in which the gate electrode is not a pn junction (as in the junction field-effect transistor) but a thin metal film insulated from the semiconductor channel by a thin oxide film. Gate control action, therefore, is entirely electrostatic. Drain and source electrodes

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PTO/SB/17 (10-03)
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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 0

Complete if Known	
Application Number	09/470,650
Filing Date	December 22, 1999
First Named Inventor	Thomas A. Figura et al.
Examiner Name	Lisa Kilday
Art Unit	2829
Attorney Docket No.	94-0280.04

METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit Account Number: 13-3092, Order No. 94-0280.04

Deposit Account Name: Micron Technology, Inc.

The Director is authorized to: *(check all that apply)*
☐ Charge fee(s) indicated below ☒ Credit any overpayments
☐ Charge any additional fee(s) during the pendency of this application
☐ Charge fee(s) indicated below, **except for the filing fee**
to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filling fee	

SUBTOTAL (1) ($) 0

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

				Extra Claims		Fee from below		Fee Paid
Total Claims	3	-46 **	=	0	X	18	=	0
Independent Claims	1	-10 **	=	0	X	84	=	0
Multiple Dependent					X		=	0

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0

***or number previously paid, if greater; For Reissues, see above*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive – unavoidable	
1453	1,330	2453	665	Petition to revive – unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17 (q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 0

SUBMITTED BY			Complete *(if applicable)*		
Name (Print/Type)	Charles Brantley	*Registration No. (Attorney/Agent)*	38,086	*Telephone*	208-368-4557
Signature	Charles Brantley			*Date*	1/9/4

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